

PROJECTION SYSTEM FOR USE IN IMAGE DISPLAY APPARATUS

ABSTRACT OF THE DISCLOSURE

An improved projection system uses a diffractive structure to provide improved image resolution. Display applications using red, green, and blue channel lenses to produce a full-color image use different diffractive structures to optimize color correction for each of the individual color bands. The preferred location of the diffractive structure is chosen near the aperture stop of the lens to minimize the range of ray incidence angles on the diffractive structure so that diffraction efficiency is maximized for the full field of view. Aspheric surfaces that have both even-power and odd-power terms are used throughout the design. The substantial improvement in image quality provided by the diffractive structure and the novel aspheric surfaces allows shorter object to image distances so that smaller-volume products are made possible.